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earnestly request chemists throughout the country to send to me for safe-keeping in the Smithsonian Institution such historical and biographical documents of American chemical history and biography as they may be willing to part with. They will be kept together, catalogued and be easily accessible to chemists, students and other proper persons. Just at present papers by the late Dr. Wolcott Gibbs are particularly desired. Questions of precedence and patent questions may be decided by such a concentration of documents in a single accessible place. Please address them to The Smithsonian Institution, Washington, D. C., care of Dr. Alfred Tuckerman.

ALFRED TUCKERMAN

NOTES ON FISHES AT CORSON'S INLET, NEW JERSEY

ON March 1, 1909, in company with my friend, Dr. R. J. Phillips, the salt-ponds on the meadows at this locality were examined for small fishes. We were rewarded by securing three fine examples of the rare *Fundulus luciae*, a small cyprinodont described from the Great Egg Harbor region by Baird in 1854. As this is the first definite instance of its occurrence in New Jersey waters since that time I have thought it well worthy of record. Dr. T. H. Bean visited the region of the type locality in 1887 and after a careful search failed to locate the fish. The rediscovery of the species was made by Dr. H. M. Smith in the lower Potomac River in 1890, and was based on two small specimens. Baird's types were not then believed to be extant. Our specimens were found associated with numerous small amphipod crustaceae, *Crangon vulgaris*, numbers of *Palæmonetes vulgaris*, small transparent *Anguilla chrisypa*, numerous *F. heteroclitus macrolepidotus* of all ages, many *Lucania parva*, great numbers of *Cyprinodon variegatus* and a single example of *Menidia beryllina cerea*. Dr. Phillips picked up a fine example of *Gobiosoma boscii* on the beach, and on February 15 he secured in a rain-pool on the barrier beach a number of specimens of *Gasterosteus aculeatus* and one of *Pygosteus pungitius*, the latter being the most southern record on the New Jersey coast

we know of. Quite a number of *Pseudopleuronectes americanus* were reported by the fishermen recently, and *Ammodytes americanus* was several times noted during the past winter.

HENRY W. FOWLER

ACADEMY OF NATURAL SCIENCES,

PHILADELPHIA,

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SCIENTIFIC BOOKS

The Mechanical Engineering of Steam Power Plants. By DR. F. R. HUTTON, Professor Emeritus, Mechanical Engineering, Columbia University. Third edition. John Wiley & Son.

The first edition of this work appeared in 1897 and it has become a standard work of reference in its class. The third revised edition contains some changes in arrangement of topics and material which brings the work up to date. In the last edition the steam turbine is fully described and its advantages, as compared with the piston engine, thoroughly discussed.

There are various technical works which relate to specific machines required for the generation of steam power, but only a few which are devoted to the installation and arrangement of these various machines so as to produce the most economic result, which is the branch of engineering to be considered in the design and installation of the machinery for a complete power plant. The modern power plant involves such a large variety of machinery that its construction constitutes a complicated problem, and it is necessary for the designer to be thoroughly acquainted with the various types of machines and the different varieties of each in order to make an aggregation, of which all the parts will co-act and perform their functions so as to produce the highest economic results. It is obvious that a steam power plant must contain "steam-making" machinery, "steam-using" machinery and the various elements required for transmitting the steam from where it is generated to where it is usefully applied. A knowledge of the industries of this country reveals numerous manufacturers engaged in the production of different vari-

eties of these elements, each of which has special merits for certain conditions and is utterly unsuited for others. In addition to the principal elements above enumerated each power plant must contain various accessory machines, as for instance, pumping installations for feed water, condensers, etc., and under certain conditions it is economical and desirable to supply various appliances for regenerating or saving heat which would otherwise be wasted, such as feed water heaters, economizers and coverings for pipes. When it is further considered that there are several special manufacturers for each of the minor kind of machines, one can readily understand that the field, which is open to Dr. Hutton, is a very extensive one.

In Dr. Hutton's treatment of the problem a full description has been given of the principal forms of boilers, various boiler accessories, furnaces, chimneys and setting, also systems of piping and the accessories for the removal of water and oil.

The principal portion of the work is devoted to "steam-using" machinery and its accessories. In this part full descriptions are given of the principal forms of piston engine and steam turbines, and also a discussion of the theory of action of these machines. The pumping machinery, condensers, construction of foundations, are also thoroughly considered.

The book contains 825 pages and nearly 700 illustrations.

The reader of the work is quite likely to regret that so much space is given to the description and theory of various elements of the power plant, all of which matter can be readily found in special treatises which find a place in practically every mechanical engineer's library, and on the other hand, that so little space is given to the proportioning and coordination of the various elements with each other and to the practical commercial problems which must be worked out in connection with the erection of every plant.

On the whole the book will prove useful to any one engaged in the study of the problem of supplying machinery for the production of power.

Professor Hutton states in his preface that the object of the book is largely the study of "function and purpose of power plant apparatus," and from that standpoint the book is certainly a successful treatise.

What Professor Hutton states respecting the future displacement of the piston steam engine by the steam turbine is doubtless true and is, I believe, of general interest. He states in effect in his preface that the steam turbine has a special field which is limited in a large measure to large units and to the use of electrical transmission and that the piston engine will always be superior for smaller units, and where a large starting torque is necessary, and he also could have added where a vacuum is not possible.

The question has often been raised by the public and investors as to the possible displacement of steam machinery by the internal combustion or gas engine. Dr. Hutton shows that such displacement is not probable, for although the thermal efficiency is higher in the internal combustion engine than in the steam engine, the cost of fuel per unit is generally greater and the repairs and maintenance are much higher. It is not probable that the internal combustion engine will ever replace the steam engine where large power units are necessary. The principal field of the internal combustion engine is that where small powers are required and where the prices of fuel per unit, labor or repairs would be offset by the extra amount of fuel or complications of a steam plant.

R. C. CARPENTER

CORNELL UNIVERSITY

An Introduction to Electricity. By BRUNO KOLBE. Being a translation of the second German edition (1904-5) by JOSEPH SKELTON. Cloth, 8vo, pp. viii + 430. Philadelphia, J. B. Lippincott Co.; London, Kegan Paul, Trench Trübner & Co. 1908.

This book is written in the form of lectures to a class of beginners with little preparation in either mathematics or mechanics. It begins with the electrification of amber, the oldest experiment known to electrical science,